

Appl. No. 10/812,606
Amdt. dated September 27, 2005
Reply to Office Action dated June 27, 2005

REMARKS

Applicant thanks the Office for the attention accorded the present Application in the June 27, 2005 Office Action. In that Action, Claims 1-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over the prior art admitted by the Applicant in the specification in view of Carlson et al. (US Patent No. 6,083,323).

35 U.S.C. §103(a) rejections

The Office has rejected Claims 1-8 under 35 U.S.C. §103(a) as being unpatentable over the prior art admitted by the Applicant in the specification in view of Carlson et al. (US Patent No. 6,083,323). The Office states that the admitted prior art teaches that in a conventional bell jar epitaxial deposition apparatus silicon deposits are removed from internal parts of the chamber during a cleaning cycle by a reactive gas. The Office further states that the prior art teaches that the walls of the bell jar are not cleaned by the reactive gas, because they are kept at a temperature which is not sufficient for cleaning, but by the air flow. The referenced air flow is used to cool the walls during deposition to reduce contamination of the walls.

The Office further states that Carlson et al. teach that such a problem was known for similar deposition apparatuses. The temperature of the wall in the Carlson et al. apparatus is controlled by the same method as in the bell jar of the prior art – by airflow circulating through a plenum surrounding the deposition chamber. Carlson et al. teaches control of airflow during different processes to enable regulation of the wall

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temperature at the required range. Carlson et al. further teach maintaining the temperature of the walls of the apparatus at a temperature sufficient to enable cleaning of the walls during the cleaning of the chamber. Carlson et al. also teaches controlling the airflow by changing the speed of the blower or by other means.

The Office contends that it would have been obvious to an ordinary artisan at the time the invention was made to regulate the temperature of the walls of the bell jar apparatus of the prior art during cleaning by controlling the airflow in the cooling plenum at a range sufficient to enable cleaning of the walls with reasonable expectation of success because Carlson et al. teach such to solve the problem of wall cleaning. Further, with respect to the limitation requiring measuring temperature of airflow, the Office contends that since airflow in the plenum is used to control important parameters during deposition and cleaning processes, it would have been obvious to an ordinary artisan at the time the invention was made to measure the temperature of the airflow in the plenum in the modified method of the prior art to enable a precise control of the method. Applicant respectfully traverses.

Carlson et al. disclose using optical pyrometers for measuring the temperature of the quartz chamber wall, the workpiece, and the workpiece support structure. (Carlson et al., Col. 3, Lines 34-47). The workpiece and the workpiece support structure are contained within the quartz chamber. (Figures 1-2). The measured temperature is compared to a target temperature and a closed loop apparatus controls the air flow past the outer surface of the reaction chamber such that the measured temperature becomes substantially equal to the target. The air flow control is provided by a

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positionable air vane located within an inlet conduit that supplies air to a shroud for channeling air past the reaction chamber. (Col 2, Lines 10-17.)

Applicant has amended Claim 1 to include the limitation that the air flow temperature within the exhaust plenum is correlated to the predetermined temperature range of the bell jar and that the air flow temperature in the exhaust plenum controls the blower speed. Applicant has amended Claim 7 to include the limitation that the blower speed is controlled by the air flow temperature in the exhaust plenum.

No where in Carlson et al., or any of the cited prior art, is there a teaching to measure the temperature of the cooling air within the exhaust plenum and maintaining the temperature of this cooling air within a predetermined temperature range by adjusting the speed of the blower. Carlson et al. measure the temperature of the quartz chamber wall (i.e. the bell jar of Applicant's invention) using optical pyrometers and adjusts an air vane to control air flow for maintaining the quartz chamber wall temperature at the target temperature. Carlson et al. do not control the speed of the blower, they only control the angle of the deflecting air vane. Further, Carlson et al. measure the temperature of the chamber wall such that the chamber wall temperature must increase to the target temperature, which is the etching temperature.

The Office states that the cited prior art is silent regarding whether or not the conventional bell jar apparatus is equipped with a device to measure a temperature of the airflow in the exhaust plenum. The Office contends that it would have been obvious to measure the temperature airflow in the plenum in the modified method of the prior art. The Federal Circuit has said that "[a]lthough the prior art device may be capable of

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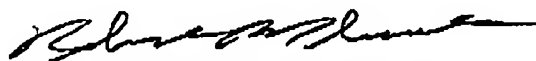
being modified to run the way [the patent applicant's] apparatus is claimed, there must be a suggestion or motivation in the reference to do so." *In Re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Carlson et al. fail to teach or suggest measuring the temperature of the cooling air in the exhaust plenum as a means to control the air flow and fails to teach changing blower speed. Applicant measures the cooling air flow within the exhaust plenum to control blower speed, not to control the position of an airflow vane, as well as to maintain a temperature sufficient for the etching process but that does not cause overheating of the O-ring seals. (Applicant's disclosure, p. 13, Lines 15-19.)

In light of the above amendments and arguments, Applicant respectfully submits that the 35 U.S.C. §103(a) rejections of Claims 1-8 have successfully been traversed. Allowance of these claims is therefore requested.

Applicant believes that all of the pending claims should now be in condition for allowance. Early and favorable action is respectfully requested.

The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

Respectfully submitted,



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